## (19) World Intellectual Property Organization

International Bureau



# 

(43) International Publication Date 27 January 2005 (27.01.2005)

PCT

### (10) International Publication Number WO 2005/008091 A1

(51) International Patent Classification7: F16H 48/06

F16D 3/84.

(21) International Application Number:

PCT/JP2004/010092

(22) International Filing Date:

8 July 2004 (08.07.2004)

(25) Filing Language:

English

(26) Publication Language:

**English** 

(30) Priority Data: 2003-278550

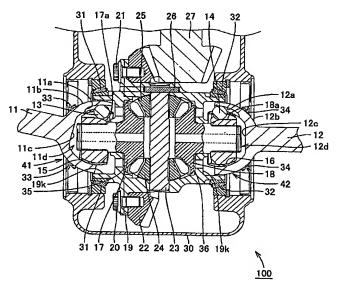
23 July 2003 (23.07.2003)

- (71) Applicant (for all designated States except US): TOY-OTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): KAKINAMI. Takuma [JP/JP]; c/o Toyota Jidosha Kabushiki Kaisha, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP). YA-MAMOTO, Takeo [JP/JP]; c/o Toyota Jidosha Kabushiki Kaisha, 1, Toyota-cho, Toyota-shi, Aichi 4718571 (JP).

- (74) Agents: FUKAMI, Hisao et al.; Fukami Patent Office, Mitsui Sumitomo Bank Minamimorimachi Bldg., 1-29, Minamimorimachi 2-chome, Kita-ku, Osaka-shi, Osaka 5300054 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: POWER TRANSMISSION APPARATUS, DIFFERENTIAL GEAR, POWER DISTRIBUTION APPARATUS, AND **HUB APPARATUS** 



(57) Abstract: A power distribution apparatus of high reliability and long life and that can be reduced in size is provided. A differential gear (100) identified as power transmission means includes a drive shaft (11), a diff case (19) provided with an opening (19k) that opens towards the drive shaft (11), constant velocity universal joints (41, 42) connected to the drive shaft (11), and side gears (17, 18) connected to drive shafts (11, 12) via constant velocity universal joints (41, 42). Outer races (11a, 12a) of constant velocity universal joints (41, 42) are formed at the end of drive shafts (11, 12). Inner races (17a, 18a) of constant velocity universal joints (41, 42) are formed at side gears (17, 18). Outer races (11a, 12a) are arranged so as to block an opening (19).



#### 

#### Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.